

## GANGRENE OF THE LUNG.

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THE diagnosis of gangrene of the lung is usually made without difficulty, provided the sputum and breath of the patient give out the characteristic, penetrating, fetid smell of decaying or burned flesh. In those cases where no such foul odor is present, and autopsy findings indicate that a considerable percentage of the cases fall into this group, the recognition of the nature of the pulmonary lesion is very difficult, and the diagnosis is usually made at autopsy.

In the following case the diagnosis of gangrene of the lung was made by plunging a long exploring needle into the area of lung involved and withdrawing about 5 c.c. of dark-colored fluid having the typical smell of gangrene and containing cellular elements of a peculiar type. Without this evidence the diagnosis of gangrene of the lung could not have been made, since neither the breath of the patient nor the sputum coughed up gave out an odor suggestive of gangrene.

This case also illustrates the value of this procedure in establishing the diagnosis of gangrene of the lung.

*A case of typhoid fever complicated by thrombosis of the right femoral vein and gangrene of the base of the right lung terminating in death;* Matt. H., aged thirty-three years, male, laborer, Bohemian, was admitted to the Minneapolis City Hospital December 12, 1905, complaining of cough and high fever. His family and personal history were both negative, except a five weeks' sickness three years before admission, the nature of which he was ignorant. He drinks and smokes moderately.

Patient's present illness dates back three weeks prior to his admission. He was working in the flour mills at the time. The patient was so ill and understood English so poorly that the details of his illness could not be secured. It was learned that he had had high fever, considerable cough, and some pain in his chest; that at times he had been delirious, and for the last week had been growing gradually worse.

The patient was a well-nourished, hardy looking laboring man; was nervous and restless; marked jaetitation of arms and legs; pupils equal; foul breath; sordes on lips and teeth; heavily coated, dry tongue; semidelirious; respirations rapid and labored; some cough, with tenacious bloody sputum; pulse 110, temperature 104.

A careful physical examination was negative for organic disease outside of the lungs and the evidence of typhoid fever.

Posteriorly in the midscapular region upon the right side the percussion note was impaired at a point 3 cm. above the angle of the

scapula, changing to a dull note from the angle of the scapula downward. The area of dullness was not movable. Vocal fremitus was not increased over this area of dullness. The breath sounds were suppressed in the area of dullness. A few fine moist rales could be heard on cough or forced breathing over this area. No tubular breathing could be heard.

The heart was negative; vessel walls somewhat thickened; abdomen moderately tympanitic; spleen not palpable. Leukocyte count 6200. Urine: no albumin, no sugar, no casts. Widal reaction positive. Sputum contained red blood cells and diplococci, but no tubercle bacilli.

The clinical diagnosis of typhoid fever was made, but the condition in the right chest was puzzling.

The patient remained in the hospital until his death—fourteen days. During this time he ran a high fever; ranging between 100.2° and 105°. Pulse 100 to 130. He was delirious much of the time, and extremely restless. His cough was persistent, at times paroxysmal and severe. The sputum was at times blood-tinged. At no time was there any odor to the sputum or the breath of the patient suggesting gangrene of the lung.

The bedside notes upon the lung condition at various dates during the illness were as follows:

Note of December 14: "Area of dullness in base of right lung is still present. Vocal fremitus is lost over this area. Bronchophony diminished. Many fine moist rales are interspersed with an occasional high-pitched sibilant rale heard in the area of dullness. These rales are most marked just below the angle of the scapula."

Note of December 15: "Area of dullness in right lung is unchanged. Vocal fremitus is absent over area of dullness. In this area on quiet breathing a friction-like, crackling sound can be heard close to the ear, most marked at the angle of the scapula. On deep inspiration and cough one hears over the area of dullness many coarse moist rales and an occasional sibilant rale. The upper part of the right lung and left lung exhibit no important physical signs."

The diagnostic comment upon the lung condition at this date reads as follows:

"The irregularity in the course of the temperature, the prolonged history of the illness, the absence of leukocytosis, and the absence of the usual physical signs of lobar pneumonia suggest strongly a tuberculous lesion in the base of the right lung. The sputum, however, is negative for tubercle bacilli. It is possible that we may be dealing with a massive pneumonia, or a lobar pneumonia complicated by a pleuritis with a thickened shaggy pleura, masking the distinctive signs of the lung consolidation. That the dullness is not due to an accumulation of fluid in the right pleural cavity is probable because of the presence of the pleural friction rub and the absence of movable dullness. There is no etiological factor to suggest infarct."

Note of December 16: "Sputum still bloody. Area of dulness in base of right lung as before. Absolute dulness begins about the angle of the scapula behind, at the posterior axillary line about the eighth interspace. Vocal fremitus is absent over dulness. Distant tubular breathing is suggested on auscultation. Many moist rales heard in base of left lung posteriorly; anteriorly over the fifth interspace a pronounced friction rub can be heard which is sharply localized between the parasternal and the left nipple lines."

Note of December 21: "When the patient lies on his left side the area of absolute dulness extends practically in a transverse line, around the right chest, beginning at the fifth interspace in front, in the sixth interspace in the postaxillary line, and at the angle of the scapula posteriorly."

Over area of dulness many loud moist rales can be heard with an occasional loud friction rub. Above the area of dulness even up to the apex of the lung, loud bubbling moist rales can be heard."

Today after the examination a long exploring needle of good caliber was introduced into the right chest just below the angle of the scapula posteriorly and over the area of dulness; 10 c.c. of a dark, chocolate-colored fluid were withdrawn (see Plate). The odor of this fluid was foul, and suggested at once gangrene of the lung. It contained (a) a few red cells, (b) a moderate number of leukocytes, (c) a moderate number of large mononuclear cells varying in size, the largest being about three to five times the size of leukocytes. In the protoplasm of these cells were many black pigment granules (Plate, A). Many black pigment granules were also seen free in the fluid and also in some of the leukocytes (Plate, B and D). These large mononuclear cells with pigment particles were alveolar epithelium undergoing degeneration. Some of these showed a thick cell membrane. The nucleus could not clearly be made out in many of them (Plate, E).

The diagnosis of gangrene of the lung was made upon the odor and character of the fluid withdrawn, and the patient was referred to the surgical side.

A lung drainage operation was done by Dr. J. C. Stewart. There was no fluid in the pleural cavity. The lower lobe of the right lung was gangrenous, soft, and friable. A foul-smelling, dark, grumous-looking fluid exuded when explored with the examining finger. Drainage from the gangrenous lung by tube was established.

The patient's condition remained unchanged after operation, except that the distressing spasmodic cough subsided and the temperature was not so high. The patient continued to lose strength, developed a talkative delirium, and died upon the fifteenth day after admission.

Postmortem diagnosis made twelve hours after death:

(a) Typhoid fever in fifth week with multiple ulcers in the ileum partially healed.

(b) Gangrene of lower lobe of right lung. Middle lobe of right lung collapsed.

(c) Embolism of branch of pulmonary artery with partially organized thrombus in vessel leading to gangrenous area. Ends of vessels in gangrenous lung area eroded.

(d) Thrombosis of right femoral vein, with organized thrombus of three or four weeks' standing.

(e) Adherent pleuritis of left pleura.

(f) Typhoid spleen.

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### THE LUTIN REACTION IN THE DIAGNOSIS OF TERTIARY AND LATENT SYPHILIS.

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THE present report will concern itself largely with the aid which the lutin reaction offers in the diagnosis of tertiary and latent syphilis. The internist sees relatively little of primary and secondary syphilis, but he is constantly called upon to differentiate from other diseases the late manifestations of syphilis of the various viscera. Syphilis of the heart and bloodvessels, of the larynx, of the lungs, mediastinal gummata, syphilis of the liver and spleen, syphilitic ulcerations of the mucous membranes, syphilis of the bones and joints, syphilis of the nervous system—these and many other of the internal manifestations of syphilis must often be weighed in differential diagnosis.

The renaissance in the study of syphilis which had its inception with Schaudinn's discovery of the *Treponema pallidum*, and which has received such tremendous impetus through the use of the Wassermann reaction and Ehrlich's salvarsan preparations, has not alone emphasized anew the astoundingly protein character of syphilitic manifestations, but has established new syndromes of syphilitic disease. As proof of this one has only to compare our present conceptions of cardiac and aortic syphilis with the teachings of less than a decade ago. Here, as in other fields, clinical pictures have been defined and clarified and certainty has replaced speculation.

Perfection of our diagnostic means, however, has not yet been attained. The Wassermann reaction has proved itself an invaluable and reliable adjunct to clinical observation, and when unequivocally positive, may be regarded as diagnostic of the presence of syphilis. Negative Wassermann reactions, on the other hand, are of limited value, for experience has shown that by no means every syphilitic patient gives a positive Wassermann reaction. This is especially true of the late visceral lesions, and fortunately it is in just this